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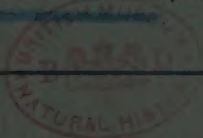
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# THE FUNGUS FLORA OF MULGRAVE WOODS.

BY

Crossland

C. CROSSLAND, F.L.S.



## ECONOMIC MYCOLOGY.

BY

G. MASSEE, F.L.S.

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## THE FUNGUS FLORA OF MULGRAVE WOODS.

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THE eighteenth Annual Fungus Foray in connection with the Yorkshire Naturalists' Union was held September 19th-24th, at the picturesque sea-side village of Sandsend, for the investigation of Mulgrave Woods and adjoining pastures. All the members of the Mycological Committee attended, with two exceptions. Besides several other members of the Union interested in the subject, there were mycologists present from Cumberland, Derbyshire, Lincolnshire and Lancashire—twenty-two in all, including two ladies—Miss Decima Graham, Carlisle, and Miss Peniston, Leeds.

The Marquis of Normandy granted special permission to visit the parks and extensive woodlands on the Mulgrave estates. This kindness was supplemented by the Vicar of Lythe allowing the members the use of two commodious school-rooms at Sandsend, from Monday to Thursday. The use of these as general meeting-room and work-room very much facilitated the proceedings, and tended largely to bring about the successful results obtained. Excellent accommodation was secured at three boarding-houses, the school-rooms being used as headquarters.

The Committee made the most of these privileges and opportunities by having all the necessary books and appliances at hand for working out the finds.

The grand old Mulgrave Woods have long been favourite hunting grounds for Yorkshire mycologists. They are rich in vegetation, with the ground almost constantly moist; these conditions, accompanied by shade, encourage the growth of a great variety of fungi on decaying woody and herbaceous remains. Here fungi are not dependant on rainfall for the necessary amount of moisture; hence these woodlands at any time supply material for a mycological student. One could not help feeling what a vast field there is the year round for a local student, did one exist.

A preliminary run out was made on the Saturday afternoon, when it soon became evident that an abundant supply of these interesting organisms could be relied upon. Two or three species of *Leptonia* were plentiful in the pastures; this caused the most experienced member present to remark that when

this happens, it is an almost certain sign that fungi generally are abundant in the woods, and so it proved.

The collecting was done in small parties so that more ground could be covered. The entrances to the woods being close at hand, no time was wasted in long drives or railway journeys, either at the beginning or ending of each day's investigations. In addition to the woods, there was plenty of pasture and meadowland to look over.

Each season, in all districts, there is a varying preponderance of a few families of agarics over others ; some are plentiful, others scarce. This season at Mulgrave, many genera abounded notably *Tricholoma*, with twenty-four species found ; *Mycena*, thirty-two ; *Russula*, twenty-eight ; *Cortinarius*, twenty-nine ; *Lactarius*, twenty ; *Philiota*, ten ; *Inocybe*, thirteen ; *Hygrophorus*, eighteen ; and so on. Other genera were comparatively equally prevalent ; even Jew's ear was abundant at Sandsend in a fence formed of aged elderberry trees. During the five days very much more material was met with than on any previous occasion. Among it were many common species that occur everywhere. Attention was given to all branches of the subject, more particularly, perhaps, to micro species.

At the rooms all the spacious table accommodation was occupied by named specimens left there for the benefit of the less-experienced students. One part of the interest lies in seeing the immense variety in size, shape, and colour displayed by the Agarics alone, when laid side by side.

On Monday evening Mr Massee gave an address on 'Economic Mycology,' dealing more especially with fungi that attack potato tubers, causing them to rot. One of these—a *Thielavia*, has been proved to have four distinct stages, each one of which, prior to the life-history of the fungus becoming fully known, was considered a distinct species. Mr. Massee's preliminary remarks appear on page 28. A special paper on the *Thielavia*, with figure, will appear later.

The same evening Mr. Wager discoursed on 'The Development of Spores in the Basidiomycetes,' tracing the fusion of a couple of nuclei into one, and its subsequent division into two or four, mostly four, in the young basidium. Later, or concurrently with the formation of the resultant nuclei, two or four projections (according to the species) spring from the upper part of the basidium. These develop into narrow cones (sterigmata), through each of which a nucleus passes upwards



from the body of the basidium into a bulb-like formation at the tip of the sterigma, which eventually ripens into a spore.

On the Tuesday evening Mr. H. C. Hawley read a paper on 'New Fungi found in Lincolnshire,' and also referred to a number of interesting species found on a single decaying thistle at the Brafferton excursion last May.

Mr. J. W. H. Johnson read a paper on 'Fungi which have developed on material taken from polluted West Riding streams.'

Much interest was taken in the proceedings by the villagers, many of whom asked permission to come in to the exhibits room to see the collection of fungi on the tables. Several brought in specimens they themselves had collected to ask what they were. One or other of the members were always at hand to give them attention. Sensible utilitarian questions, such as 'Which are edible?' 'Is that good to eat?' etc. were put. To them, the edible aspect appealed the most; they could see no other recompense in the study of fungi. Their attitude reminded the writer of a friend of his, who, on seeing him overhauling a toadstool, asked if it was fit to eat; on the reply 'No, this one isn't' being given, the queriest says: 'What are you bothering with it for then?' This neatly sums up the common notion in respect to the study of toadstools. There were eighteen or twenty edible species on the tables, pointed out to the visitors. This side of the study was encouraged, but at the same time, the enquirers were advised to gather none to cook only well-marked species, about which there could be no possibility of mistake, such as the parasol mushroom, shaggy caps, ivory caps, blewits, etc. In June, it was noticed by the writer that St. George's mushroom—*Tricholoma gambosum*—one of the best of edible toadstools, was very abundant in the fields.

At the close of the Foray, and after a few boxes of micro-material had been gone through by several members at home, the total determined reached 612 'species' and 12 vars. The analysis of the list shows that three—*Tricholoma carneolum*, *Pholiota sororia* and *Inocybe commixta*—are additions to the British Fungus Flora, twenty-seven new to the county, and seventy-six to vice county N.E. 256 are additions to the previously known fungus flora of Mulgrave Woods and adjoining pastures, which now amounts to 816 'species.'

It must be understood that many are but stages in the life.

history of fungi that may have two or even three conditions. As these become better known throughout the county, a reduction in the numbers of previously supposed species will be necessary to get at a more accurate census of the fungi of the county.

The weather was all that could be desired for collecting purposes; rain began to fall on Tuesday morning, but soon cleared off. Several species of special interest were met with, one being *Bolbitius Boltoni* Fr., about which some uncertainty has been expressed as to whether it was a native of Britain (Mass. 'Brit. Fung. Flo.,' II., p. 205). It is quite distinct from *B. flavidus* in the depressed, darker disc and subadnate gills.

Sandsend proved a most suitable place for headquarters, being close to the ground to be investigated. The school-rooms were ideal places for general work and exhibit-rooms. An easily obtainable sea-side saunter afforded a charming break in the work for those who had the time and the inclination to indulge in this delightful and invigorating pastime. With us these were few; the woods and the work-room having the preference. A few, including Messrs. Massee and Clarke, were so absorbed in working out material brought in, that they did not get even into the woods.

At the business meeting on the Wednesday evening, a vote of thanks was heartily passed to Lord Normandy for leave to explore the estates, and to Vicar Harland, for allowing us the use of the school-rooms.

The Committee for the current year was re-elected. Castle Howard is recommended to the Union as the place for the next foray—September 18th-23rd, 1909.

In the following bald list, those new to Britain are marked \*, to Yorkshire, †. The remainder are all additions to the Mulgrave district, previous records having been strictly excluded.

<i>Crucibulum vulgare.</i>	<i>T. luridum.</i>
<i>Lycoperdon echinatum.</i>	† <i>T. squarrulosum.</i>
<i>L. caelatum.</i>	<i>T. saponaceum.</i>
<i>Bovista pusilla.</i>	<i>T. sulphureum.</i>
<i>Lepiota rachodes.</i>	† <i>T. cerinum.</i>
<i>L. carcharia.</i>	<i>T. ionides.</i>
† <i>L. glioderma.</i>	* <i>T. carneolum.</i>
<i>Armillaria ramentacea.</i>	<i>T. gambosum</i> (In June).
<i>Tricholoma sejunctum.</i>	<i>T. nudum.</i>
<i>T. ustale.</i>	<i>T. saevum.</i>
	<i>T. panæolum.</i>

- Tricholoma melolencum*.  
and Var. *porphyrolencum*.  
*T. humile*.  
*T. sordidum*.  
*T. paedidum*.  
† *Cliticybe comitalis*.  
*C. phyllophila*.  
*C. pithyophila*.  
*C. dealbata*.  
† *C. ampla*.  
*C. gigaytea*.  
*C. geotropa*.  
*C. cyathiformis*.  
† *C. expallens*.  
*Collybia nummularia*.  
*C. esculenta*.  
† *C. exsculpta*.  
*Mycena lineata*.  
*M. flavo-alba*.  
*M. gypsea*.  
*M. pullata*.  
*M. melata*.  
*M. aetites*.  
*M. amicta*.  
*M. tenella*.  
*M. rorida*.  
*M. stylobates*.  
*M. hiemalis*.  
*M. setosa*.  
*M. capillaris*.  
*Omphalia hydrogramma*.  
*Pleurotus ostreatus*.  
*P. chioneus*.  
*Entoloma prunuloides*.  
*Leptonia solstitialis*.  
*L. euchroa*.  
*Nolanea pisciodora*.  
*Eccilia rhodocylix*.  
*Claudopus depluens*.  
† *Pholiota terrigena*.  
*P. ombrophila*.  
*P. squarrosa* var. *Mülleri*.  
*P. flammans*.  
*P. tuberculosa*.  
\* *P. sororia*.  
† *Inocybe hirsuta*.  
† *I. haemacta*.  
*I. scaber*.  
*I. Bongardii*.  
[ *I. carpta*. ]
- I. scabella*.  
*I. violacea-fusca*.  
\* *I. commixta*.  
*Hebeloma glutinosum*.  
*H. crustuliniforme* var. *minor* Cke.  
= *hiemale* Bres.  
*H. nudipes*.  
*H. nauseosum*.  
*Flammula gymnopodia*.  
*F. gummosa*.  
*F. alnicola*.  
*F. sapinea*.  
*F. ochrochlora*.  
*Naucoria melinoides*.  
*N. semiorbicularis*.  
*N. tabacina*.  
*N. temulenta*.  
*N. erinacea*.  
*Galera ovalis*.  
*Tubaria furfuracea*.  
Var. *trigonophylla*.  
*Bolbitius Boltoni*.  
*B. fragilis*.  
*B. titubaus*.  
*Cortinarius* (Phleg.) *sebaceus*.  
† *C.* (Phleg.) *variicolour*.  
*C.* (Myxa.) *livido-ochraceus*.  
*C.* (Ino.) *violaceus*.  
*C.* (Derm.) *anomalus*.  
† *C.* (Tela.) *macropus*.  
† *C.* (Tela.) *bovinus*.  
*C.* (Tela.) *rigidus*.  
*C.* (Hygr.) *saturninus*.  
*C.* (Hygr.) *castaneus*.  
*C.* (Hygr.) *rigens*.  
*Agaricus sylvaticus*.  
*A. campestris* var. *hortensis*.  
*A. comptulus*.  
*Stropharia inuncta*.  
*S. coronilla*.  
*S. merdaria*.  
*Panaeolus phalaenarum*.  
*Psathyra elata*.  
*P. conopilea*.  
*P. spadiceo grisea*.  
*Coprinus soboliferus*.  
*C. Gibbsii*.  
*C. cordisporus*.  
*Paxillus lepista*.  
† *P. extenuatus*.

- Hygrophorus russo-coriaceus.*  
*H. sciophanus.*  
 † *H. mucronellus.*  
*H. nitratus.*  
*Lactarius insulsus.*  
*L. trivialis.*  
*L. piperatus.*  
*L. rufus.*  
*L. fuliginosus.*  
*L. mitissimus.*  
*L. camphoratus.*  
*L. cemicarius.*  
*L. obliquus.*  
*Russula drimeia.*  
 † *R. atro-purpurea.*  
*R. Linnæi.*  
*R. velutinosus.*  
*R. decolorans.*  
*R. ochracea.*  
*Marasmius prasiosmus.*  
*M. fuscopurpureus.*  
 † *M. Wynnei.*  
*M. candidus.*  
*Panus conchatus.*  
  
*Boletus crassus.*  
*Polyporus dryadeus.*  
 † *P. lacteus.*  
*Polystictus radiatus.*  
*Fomes connatus.*  
*Poria medulla-panis.*  
*Merulius corium.*  
  
 † *Hydnum sordidum.*  
*Radulum orbiculare.*  
*Phlebia contorta.*  
*Odontia fimbriata.*  
  
*Solenia anomala.* Var. *ochracea.*  
*Corticium calceum.*  
*Hymenochaeta fuliginosa.*  
*H. corrugata.*  
*Peniophora rosea.*  
*Coniophora sulphurea.*  
*C. puteana.*  
  
*Clavaria formosa.*  
*C. abietina.*  
*C. incarnata.*  
*C. dissipabilis.*  
*C. ligula.*
- Typhula erythropus.*  
 † *T. gracilis.*  
*Pistilaria quisquilaris.*  
*P. puberula.*  
  
*Exidia recisa.*  
*E. albida.*  
*Nematelia encephala.*  
*Calocera stricta.*  
  
*Melampsora epitea.* On *Salix viminalis.*  
*M. circææ.* On *Circæa lutetiana.*  
*Coleosporium senecionis.* On *Senecio vulgaris.*  
*Puccinia saniculæ.* On *Sanicula europæa.*  
*P. obscura.* *Æcid.* On *Bellis perennis*, abundant.  
*P. centaureæ.* On *Centaurea nigra.*  
*P. lychnidearum.* On *Lychnis diurna.*  
*P. glomerata.* On *Senecio Jacobææ.*  
*P. veronicarum.* On *Veronica montana.*  
*Phragmidium violaceum.* On *Rubus fruticosus.*  
*Triphragmium ulmaricæ.* On *Spiræa ulmaria.*  
*Ustilago violacea.*  
  
*Epichloe typhina.*  
*Nectria cucurbitula.*  
*N. aquifolii.*  
*Hypomyces aurantiis.*  
*Xylaria polymorpha.*  
*Ustilina vulgaris.*  
*Hypoxydon multifome.*  
*H. rubiginosum.*  
*Phyllachora graminis.*  
*Diatrype aspera.*  
*Valsa ceratophora.*  
*V. leiphæmia.*  
*Eutypa Acharii.*  
 † *E. scabrosa.*  
*Rosellinia pulveracea.*  
*Sordaria minuta.*  
*S. curvula.*  
*Sporormia intermedia.*  
*Raphidospora rubella.*  
*R. acuminata.*



*Heptameria doliolum.*  
and Var. *conoidea.*

*Pleospora meliloti.*  
*Hypoderma virgultorum.*  
*Gloniopsis curvata.*  
*Hysterium pulicare.*

*Geoglossum glutinosum.*

*Mitula olivacea.*

*Geopyxis cupularis.*

*Humaria carbonigena.*

*Lachnea coprinaria.*

*Dasyscypha ciliaris.*

*D. puberula.*

*Ciboria ochroleuca.*

*C. luteovirescens.*

*Helotium virgultorum.*

*H. herbarum.*

*H. epiphyllum.*

*H. immutabile.*

*H. alniellum.*

*Mollisia lignicola.*

*Ryparobius sexdecemsporus.*

*Ascophanus carneus.*

*A. argenteus.*

*A. ochraceus.*

*A. equinus.*

*Ascobolus immersus.*

*Saccobolus neglectus.*

*S. Kerverni.*

*Coryne urnalis.*

*Stictis radiata.*

*Phacidium multivalve.*

*Pilobolus Kleinii.*

*Pilaira anomala.*

*Spinellus fusiger.*

*Chaetocladium Jonesii*

*Piptocephalis [repens?].*

*Peronospora grisea.*

*Sphaeronemella fimicola.*

† *Gloeosporium podograria.*

*Cylindrium flavovirens.*

*Botrytis Tilletii.*

† *Ovularia interstitialis.*

*Ramularia calcea.*

*Periconia pycnospora.*

*Dendryphium comosum.*

*Stilbum fasciculatum.*

*Stysanus stemontes.*

† *Tubercularia brassicae.*

*Bactridium flavum.*

*Fusarium roseum.*

*Epicoccum herbarum.*

*Clathrotychium rugulosum.*

*Perichaena depressa.*

*Arcyria cinerea.*

*Trichia fragilis.*

*T. chrysosperma.*

*Spumaria alba.*

The members and friends present at the Foray have been supplied with a lithographed MS. copy of the complete list of the 612 'species' found on this occasion.



## ECONOMIC MYCOLOGY.

G. MASSEE, F.L.S.

*Kew.*

THE importance of the correct determination of species cannot be over-estimated. Whatever branch of botany is followed, its real value depends upon being quite certain as to the particular species dealt with. It has been clearly demonstrated that many of the apparent contradictions, so general in morphological and cytological dissertations, have originated in mistaking one species for another. *A* describes some peculiarities of structure or otherwise, present in a given species. *B* promptly follows in line to corroborate or refute the discovery, mistakes his species, and much argument follows. Notwithstanding the value of being able to correctly discriminate species, the fact that being able to do so fails to advance our knowledge in any way as bearing on the why and wherefore of such species, in other words, it does not touch the great problem concerning origin, affinities, etc.

As a body we are justly proud of our 'Fungus Flora of Yorkshire,' nevertheless, we must endeavour to maintain a correct sense of proportion, and not become slaves to list-making alone. We have now a thoroughly representative Fungus Flora of our county, and the addition of a few more or less, can make no difference from the standpoint of pure knowledge. The area of our county is too insignificant, as is also that of Great Britain, to be admitted as a factor in the distribution of Fungi over the globe.

Many Fungi are unique amongst plants in appearing under very different forms, during different periods of their development, the different forms often growing on different host-plants. These various forms were at one time considered as independent species, and received special names. Such names must remain until proof is forthcoming, that two or more such forms are in reality but stages in the life-cycle of one species. This is the kind of work that Yorkshire mycologists might attempt.

Between sixty and seventy thousand species of Fungi are known; out of these it is certain that at least twenty five thousand so-called species are nothing more than phases of other higher forms. There are some hundreds of such in the list of names of Yorkshire Fungi, and it becomes the duty of Yorkshire

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mycologists to remove such from the list, by connecting them with the higher forms to which they belong. If such work cannot be carried out to finality, yet much can be done in the field and at home to suggest such affinities. All the Hyphomycetes, popularly known as moulds, are only forms, not entities, the same is true of the species of *Phoma*, *Cladosporium*, etc. If the substance on which these are growing is kept under observation, it may be for weeks, or even months, a second stage will follow the first. If this sequence of development is constantly repeated, it is highly probable—but not definite proof—that the two forms are related to each other. The definite proof consists in producing one stage from the spores produced by the alternate condition, a work of no insuperable difficulty.

During the summer our plane trees are often defoliated early in the season, owing to a minute fungus called *Glaeosporium nervisequum*. In the spring a second form of the fungus appears on the wounds made by the first on the dead fallen leaves. This second form was known as *Pseudopeziza platani*. In consequence, the name *Glaeosporium* is dropped, as it is known to be only a stage of the ascigerous *Pseudopeziza*.

Our object up to the present has been to obtain the greatest possible number of names of Fungi inhabiting Yorkshire. Our future ambition should be to reduce the list of names as much as possible, along the lines indicated above.

It may be thought that the Agarics are not included in the category of duplicate forms. This is not so, many so-called moulds are only the conidial forms of Agarics.\*

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\* In addition to these useful and suggestive preliminary remarks, we hope shortly to print an account of the life-history of the *Thielavia*, with figure, by Mr. Massee.







